CLAIMS

We claim:

1. A modified Par-4 comprising a substitution of least one amino acid residue in the amino acid sequence of a precursor Par-4 in at least one position of naturally produced Par-4, wherein the modified Par-4 is effective in reducing the size of tumors resistant to Par-4.

2. The modified Par-4 of claim 1, comprising a mutant of Par-4 selected from the group consisting of 1-204, 137-221, 137-213, 137-198 and 137-195.

3. An isolated nucleic acid sequence fragment comprising at least 500 contiguous nucleotides including a polymorphic site comprising a mutant of Par-4 selected from the group consisting of 1-204, 137-221, 137-213, 137-198 and 137-195.

4. A recombinant DNA vector comprising one or more sequences of claim 3 operably linked to a transcription regulatory element.

5. A cell comprising a DNA vector of claim 4, wherein the cell is

selected from the group consisting of bacterial, fungal, plant, insect and mammalian cells.

6. An isolated polypeptide comprising at least five amino acid residues, wherein the polypeptide has a sequence encoded by a nucleic acid contained in one or more sequences of claim 3.

7. A method of producing a polypeptide, comprising incubating a host cell comprising a nucleic acid encoding a polypeptide of claim 4 under conditions that permit expression of the polypeptide.

8. A method of producing a polypeptide, comprising incubating a cell of claim 5 under conditions that permit expression of one or more polypeptides encoded by the nucleic acid.

9. An antibody that specifically binds to at least one immunogenic component, wherein the immunogenic component is encoded by one or more sequences of claim 3.

10. A method of screening for therapeutic agents comprising selecting an X-associated specific sequence as a target sequence;

contacting a test compound with the target sequence; and

selecting as candidate therapeutic agents those test compounds which bind to the target sequence.

11. The method of claim 9, wherein the sequence is a polypeptide encoded by one or more sequences of claim 3.

12. A therapeutic compound comprising an agent which binds to one or more sequences of claim 3 or a polypeptide encoded thereby.

13. A kit for detecting the presence a Par-4 mutant-associated nucleic acid in a sample comprising at least one container means having disposed therein at least a first nucleic acid molecule of claim 3.

14. The kit of claim 13, wherein at least one of the first and second nucleic acid molecule includes a detectable label.

15. A kit for detecting the presence a Par-4 mutant-associated polypeptide in a sample comprising at least one container means having disposed therein a first antibody specific for at least one polypeptide of claim 6.

16. The kit of claim 14, further comprising a second antibody

specific for at least one polypeptide of claim 6.

17. The kit of claim 16, further comprising a means for detecting at least one of the first and second antibodies.

18. A method of treating cancer in a subject suffering therefrom, comprising administering to the subject a Par-4 mutant, wherein the administration of the Par-4 mutant causes reduction of tumors resistant to Par-4.

19. The method of claim 18, wherein the cancer is selected from the group consisting of prostate cancer, breast cancer and lung cancer.

20. The method of claim 18, wherein the subject is selected from the group consisting of a canine, a feline, an ovine, a primate, an equine, a porcine, a caprine, a camelid, an avian, a bovine, amphibian, fish or a murine organism.

21. The method of claim 20, wherein the subject is a primate.

22. The method of claim 21, wherein the subject is human.

23. The method of claim 18, wherein the Par-4 mutant a mutant of Par-4 selected from the group consisting of 1-204, 137-221, 137-213, 137-198 and 137-195.

24. A pharmaceutical composition for the treatment of cancer, comprising an isolated and purified Par-4 mutant comprising the amino acid sequence of claim 3, and a pharmaceutically acceptable diluent, carrier or excipient.